

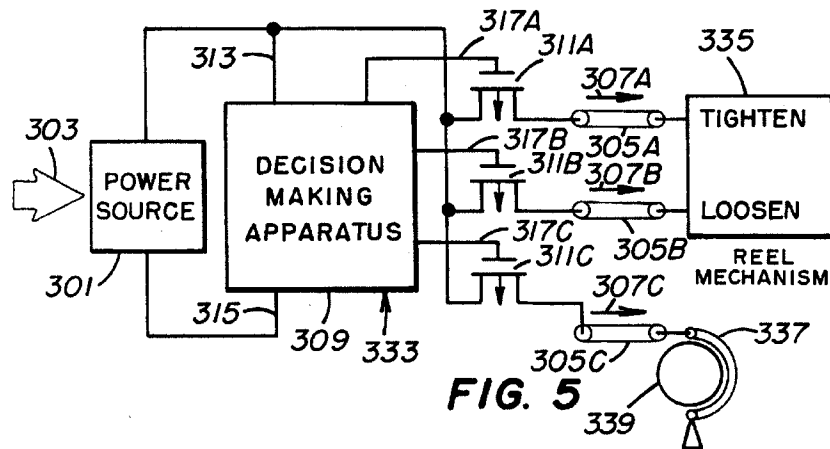
### **REMARKS**

Claims 1-3, 5-16, and 21-31 were pending in this application prior to entry of the present amendments. Claims 14-16 and 21-31 were withdrawn in the Response to the Restriction Requirement filed on February 13, 2009. Claims 4 and 17-20 were cancelled in a previous action without prejudice. Applicants reserve the right to pursue the subject matter of the cancelled claims at a later date. Claims 1 and 7-11 have been amended herein. The present amendments do not add new matter. Support for amended Claims 1 and 7-11 can be found, for example, at least at paragraphs [0028]-[0029] of the specification as originally filed.

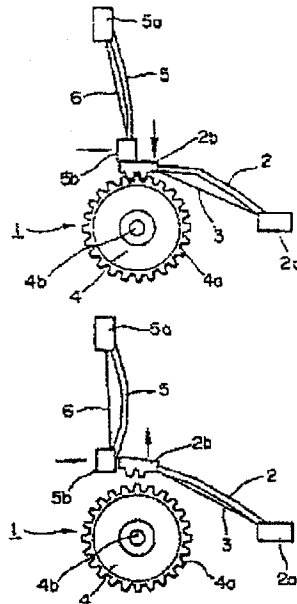
#### **Rejection under 35 U.S.C. § 103**

The Examiner rejected Claims 1-3 and 5-13 under 35 U.S.C. § 103(a) as being unpatentable over Chu (U.S. 5,831,417; hereinafter “Chu”) in view of Youichirou (JP 03037433; hereinafter “Youichirou”). Applicants respectfully traverse these rejections. However, in order to advance prosecution, Applicants have amended Claim 1 (and dependent Claims 7-11 for consistency) and submit that amended Claim 1 also is patentably distinguished over the cited art.

Chu appears to disclose a generator “which converts mechanical energy into electrical energy to power...mechanical work.” Abstract. As an example, Chu’s Figure 5 below illustrates an electronic fishing reel. “[T]he reel handle or the spinning of the spool during bait casting can provide the mechanical energy...303 to power generator 301, which powers decision making apparatus 309.” *See* Chu, column 5 at ll. 16-19. “If a decision is made to tighten...the drag, decision making apparatus 309 turns on [a] switch...311A...so that electric current 307A flows through ohmic electromechanical transducer 305A[, which] contracts and activates the reel mechanism 335...” *See id.* at ll. 24-29. “If a decision is reached to loosen the drag, decision making apparatus 309 turns on [a] switch...311B...so that electric current 307B flows through...wire 305B, whose contraction causes reel mechanism 335 to loosen...” *See id.* at ll. 29-33.



As seen in the Figure below, Youichirou appears to disclose a “linear shape memory alloy 3 of a first elastic body 2.” See Abstract. When electrified, “the shape memory alloy 3 [contracts]” and “the elastic body 2 [elastically deforms].” See *id.* The “top end part 2b is [then] engaged with the teeth part 4a of a gear 4 to brake the gear 4” and “the front surface of [the] top end part 5b [of the second elastic body 5] is touched by the back surface of the top end part 2b of the elastic body 2 to keep the braked state.” See *id.* When electrified, “the [second] shape memory alloy 6 of the elastic body 5...[contracts], the elastic body 5 [also contracts]...,” resulting in the “[separation] from the elastic body 2” and “release [of] the brake... gear 4.” See *id.*



Amended Claim 1 recites “A friction brake assembly to act between a main actuator, a linear shaft relatively moveable with respect to said main actuator, and a joint assembly relatively rotatable with respect to said linear shaft, comprising: a brake member connected to said main actuator, a carrier connected to said linear shaft; a friction pad attached to said carrier for engagement with said brake member; a first actuator including at least one shape memory alloy element, said first actuator being operable upon said carrier to move said friction pad into engagement with said brake member, wherein the engagement of said friction pad with said brake member inhibits longitudinal displacement of said linear shaft and inhibits a corresponding rotation in said joint assembly; a second actuator including at least one shape memory alloy element, said second actuator being operable upon said carrier to move said friction pad away from said brake member, wherein the moving away of said friction pad from said brake member induces longitudinal displacement of said linear shaft and induces a corresponding rotation in said joint assembly; and a control circuit to operate selectively said first and second actuator” (emphasis added).

Applicants respectfully submit that Chu in view of Youichirou does not teach, *inter alia*, that the engagement of a friction pad with a brake member inhibits longitudinal displacement of a linear shaft and inhibits a corresponding rotation in a joint assembly. Moreover, Applicants respectfully submit that the cited references do not teach or suggest that the moving away of said friction pad from said brake member induces longitudinal displacement of said linear shaft and induces a corresponding rotation in said joint assembly as recited, among other features, in amended Claim 1. Therefore, Applicants submit that amended Claim 1 is allowable over Chu in view of Youichirou and respectfully request withdrawal of the rejection.

Applicants’ Traversal of Official Notice

With respect to Claims 5-6 and 10-12, the Examiner takes Official Notice that “having multiple parallel tensile SMA elements instead of one SMA element is a matter of practicality in that multiple SMA elements would act as back up elements and would have been obvious to one of ordinary skill in the art to have provided redundancy to ensure a proper operation and to increase longevity of the brake assembly.”

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Applicants respectfully traverse the Examiner's assertion of Official Notice and submit that the Examiner's suggested modifications are not capable of instant and unquestionable demonstration as being well-known (see M.P.E.P. § 2144.03(A) stating that "Official notice without documentary evidence to support an examiner's conclusion is permissible only in some circumstances. While 'official notice' may be relied on, these circumstances should be rare when an application is under final rejection.... Official notice unsupported by documentary evidence should only be taken by the examiner where the facts asserted to be well-known, or to be common knowledge in the art are capable of instant and unquestionable demonstration as being well-known.").

In particular, the Figure of Youichirou appears to illustrate one SMA element for use in a brake device and does not appear to suggest the use of any backup elements. See Youichirou, Abstract and Figure. Thus, Applicants respectfully request documentary evidence supporting the Examiner's assertion that it would have been obvious to one of ordinary skill in the art to use multiple parallel tensile SMA elements. Absent such documentation, Applicants respectfully request the Examiner to withdraw the assertion of Official Notice as support for any rejection.

#### Dependent Claims

As Claims 2-3 and 5-13 depend from amended Claim 1 and recite additional distinguishing features, Applicants respectfully submit that Claims 2-3 and 5-13 are likewise allowable over Chu in view of Youichirou as each of these claims recites a unique combination of features not taught or suggested by the cited art.

#### CONCLUSION

Applicants submit that the claims are in condition for allowance and respectfully request the same. Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicants are not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicants reserve the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution.

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Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicants have made any disclaimers or disavowals of any subject matter supported by the present application.

Furthermore, any remarks in support of patentability of one claim should not be imputed to any other claim, even if similar terminology is used. Any remarks referring to only a portion of a claim should not be understood to base patentability on that portion or that the limitation discussed is essential or critical; rather, patentability must rest on each claim taken as a whole. Applicants respectfully traverse each of the Examiner's rejections and each of the Examiner's assertions regarding what the prior art shows or teaches, even if not expressly discussed herein. Although changes to the claims have been made, no acquiescence, disclaimer or estoppel is intended or should be implied thereby; such amendments are made only to expedite prosecution of the present application and are without prejudice to the presentation or assertion, in the future, of claims relating to the same or similar subject matter. Applicants may not have presented in all cases, arguments concerning whether the applied references can be properly combined or modified in view of the deficiencies noted above, and Applicants reserve the right to later contest whether the cited references can be properly combined or modified.

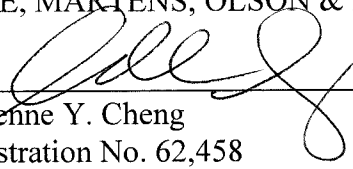
The undersigned has made a good faith effort to respond to all of the rejections in the case and to place the claims in condition for immediate allowance. Nevertheless, if any undeveloped issues remain or if any issues require clarification, the Examiner is respectfully requested to call Applicants' attorney in order to resolve such issue promptly.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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Dated: April 30, 2010

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